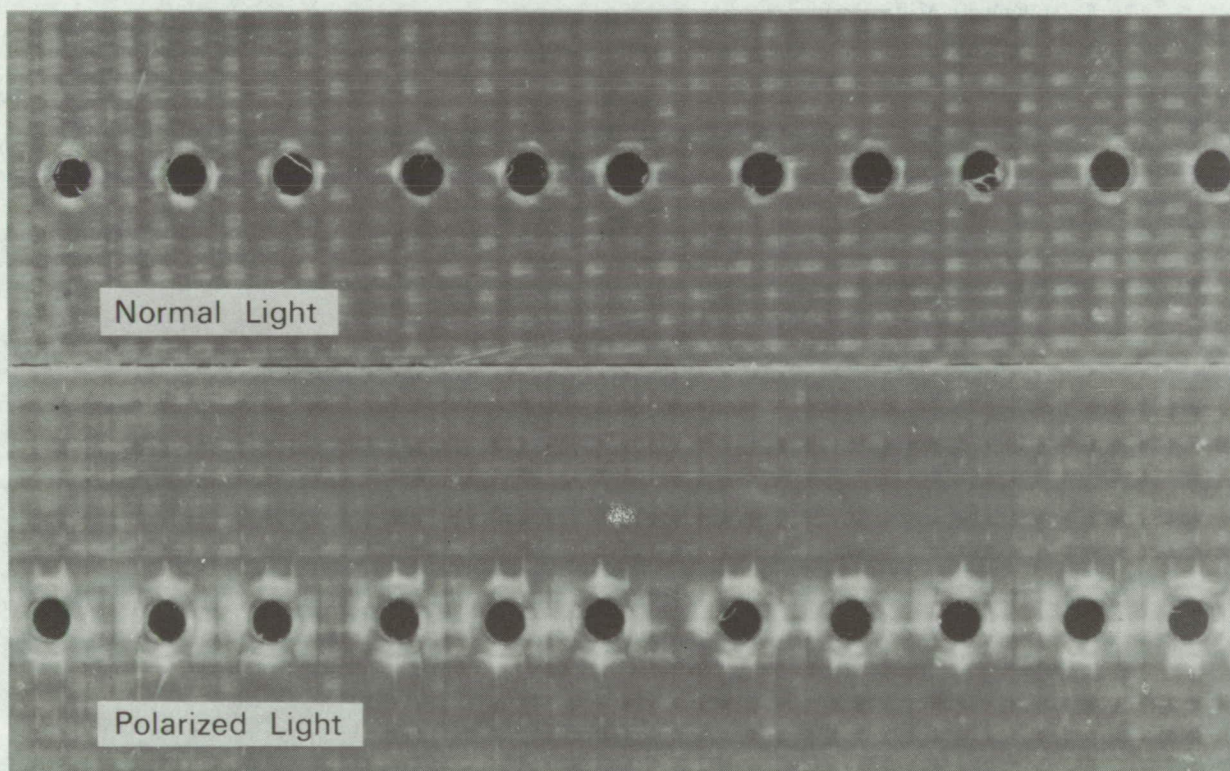


NASA TECH BRIEF



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Polarized Light Reveals Stress in Machined Laminated Plastics



The problem:

Improper drilling (drill speed, feed speed, and drill sharpness) causes locked-in stresses in laminated plastic components such as terminal and printed circuit boards. These stresses cannot be detected under normal light by the human eye until they are exposed to the elevated temperatures of soldering operations,

at which time they become clearly visible as fractures and delaminations.

The solution:

The drilled components are exposed to polarized light which renders clear to the human eye the locked-in stresses that will result in fractures and delaminations when the soldering procedure takes place. The figure

(continued overleaf)

illustrates the difference between viewing the same holes under normal light and polarized light.

Notes:

1. This technique detects stresses early in the production cycle before appreciable man-hours are invested in an item destined for rejection.
2. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer
Lewis Research Center
21000 Brookpark Road
Cleveland, Ohio 44135
Reference: B67-10383

or

New Technology Representative
General Dynamics/Convair Division
Mail Zone 103-19
5001 Kearny Villa Road
San Diego, California 92112
Reference: B67-10359

Patent status:

No patent action is contemplated by NASA.

Source: J. Frankowski
of General Dynamics/Convair Division
under contract to
Lewis Research Center
(LEW-10018)